

WHAT IS CLAIMED IS:

1. A substantially pure or recombinant 312C2 protein or
5 conservatively modified variants thereof, said protein:
- a) is expressed on activated T cells; or
 - b) specifically binds to antibodies generated against
SEQ ID NO: 2 or 4.
- 10 2. A protein or peptide of Claim 1, selected from the
group consisting of:
- a) a natural protein from a warm blooded animal
selected from the group of birds and mammals,
including a rodent or primate;
 - 15 b) a protein or peptide:
 - i) comprising at least one polypeptide segment
of at least 14 amino acids of SEQ ID NO: 2;
 - ii) comprising at least one polypeptide segment
of at least 14 amino acids of SEQ ID NO: 4;
 - 20 or
 - iii) which is not glycosylated;
 - iv) which is in a buffered solution;
 - v) which is attached to a solid substrate;
 - vi) which exhibits a plurality of epitopes from
25 SEQ ID NO: 2 or 4;
 - vii) which is detectably labeled;
 - viii) which is a synthetic polypeptide;
 - ix) which is conjugated to a chemical moiety;
 - x) which is a 5-fold or less substitution from a
30 natural sequence; or
 - xi) which is a deletion or insertion variant
from a natural sequence.
3. A protein or peptide of Claim 1, comprising a sequence
35 from the extracellular or the intracellular portion of a
312C2.

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4. A fusion protein comprising a peptide of Claim 1.
5. A sterile composition comprising the protein of Claim 1, and a pharmaceutically acceptable carrier.
- 5 6. An antibody which specifically binds a protein or peptide of Claim 1.
7. An antibody of Claim 6, wherein:
- 10 a) said 312C2 is a mammalian protein, including a mouse or human;
- b) said antibody is raised against a purified peptide sequence of SEQ ID NO: 2 or 4;
- c) said antibody is a monoclonal antibody;
- 15 d) said antibody is detectably labeled;
- e) said antibody is attached to a solid substrate;
- f) said antibody is in a sterile composition; or
- g) said antibody is in a buffered composition.
- 20 8. A method of purifying a 312C2 protein or peptide from other materials in a mixture comprising contacting said mixture to an antibody of Claim 6, and separating bound 312C2 from other materials.
- 25 9. An isolated or recombinant nucleic acid capable of encoding a protein or peptide of Claim 1.
10. A nucleic acid of Claim 9, wherein said nucleic acid:
- 30 a) encodes a sequence of SEQ ID NO: 2 or 4;
- b) comprises a sequence of SEQ ID NO: 1 or 3; or
- c) encodes a sequence from an extracellular domain of a natural 312C2;
- d) encodes a sequence from an intracellular domain of a natural 312C2;
- 35 e) attached to a solid substrate;
- f) is detectable labeled; or
- g) is in a sterile composition.

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11. An expression or replicating vector of Claim 9.

12. A kit comprising:

- a) a substantially pure 312C2 or fragment of Claim 1;
- b) an antibody or receptor which specifically binds a 312C2; or
- c) a nucleic acid encoding a 312C2 or peptide.

13. A method for detecting in a sample the presence of a 312C2 nucleic acid, protein, or antibody, comprising testing said sample with a kit of Claim 12.

14. A method of modulating the physiology of a cell comprising contacting said cell with:

- a) a substantially pure 312C2 or fragment of Claim 1;
- b) an antibody or binding partner which specifically binds a 312C2; or
- c) a nucleic acid encoding a 312C2 or peptide.

15. The method of Claim 14, wherein said cell is a T cell and said modulating of physiology is:

- a) apoptosis of said T cell; or
- b) activation of said T cell

16. A method of Claim 14, wherein said cell is in a tissue and/or in an organism.

17. A method of expressing a 312C2 comprising expressing a nucleic acid of Claim 9.

18. A cell, tissue, organ, or organism comprising a nucleic acid of Claim 9.

19. A recombinant nucleic acid comprising sequence at least about 70% identity over a stretch of at least about

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30 nucleotides to a 312C2 nucleic acid sequence of SEQ ID NO: 1 or 3.

20. A nucleic acid of Claim 19, further encoding a polypeptide comprising at least about 60% identity over a stretch of at least about 20 amino acids to a 312C2 sequence of SEQ ID NO: 2 or 4.

21. A method of treating a host mammal having an abnormal immune response by administering to said mammal an effective dose of:

- a) an antibody or binding partner which binds specifically to a 312C2;
- b) a substantially pure 312C2 protein or peptide thereof; or
- c) a nucleic acid encoding a 312C2 peptide.

22. The method of Claim 21, wherein said abnormal immune response is characterized by:

- a) a T-cell immune deficiency;
- b) chronic inflammation; or
- c) tissue rejection.

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C8

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D9